

# THE TAXONOMY OF SOME INDO-PACIFIC MOLLUSCA

## Part 5. With descriptions of new taxa and remarks on *Nassarius albus* (Say)

W. O. CERNOHORSKY

AUCKLAND INSTITUTE AND MUSEUM

*Abstract.* A species of Mitridae from the Hawaiian Islands and a species of Triphoridae from the Samoa Islands are described as new to science. The Hawaiian *Mitra foveolata* Dunker, is a subspecies of *Subcancilla verrucosa* (Reeve). The nassarid species *Nassa clathratula* A. Adams and *N. obtusata* A. Adams, erroneously described from the Philippines, and *N. annelifera* Reeve, from unknown locality, are synonyms of the Caribbean *Nassarius albus* (Say). The nassarid genus-group *Gussonea* Monterosato, 1912, has chronological priority over *Amyclina* Iredale, 1918. *Phos naucratoros* Watson, is recorded from Queensland, Australia, and the Australian Pliocene *Austroharpa tatei* Finlay, is here compared with *A. sulcosa* Tate.

### Family MITRIDAE

#### Genus *Mitra* Lamarck, 1798

*Mitra* Lamarck, 1798, Tabl. Encycl. Méth. pl. 369. Type species by T *Voluta mitra* Linnaeus, 1758 (Opinion 885 of ICZN). Recent, Indo-Pacific.

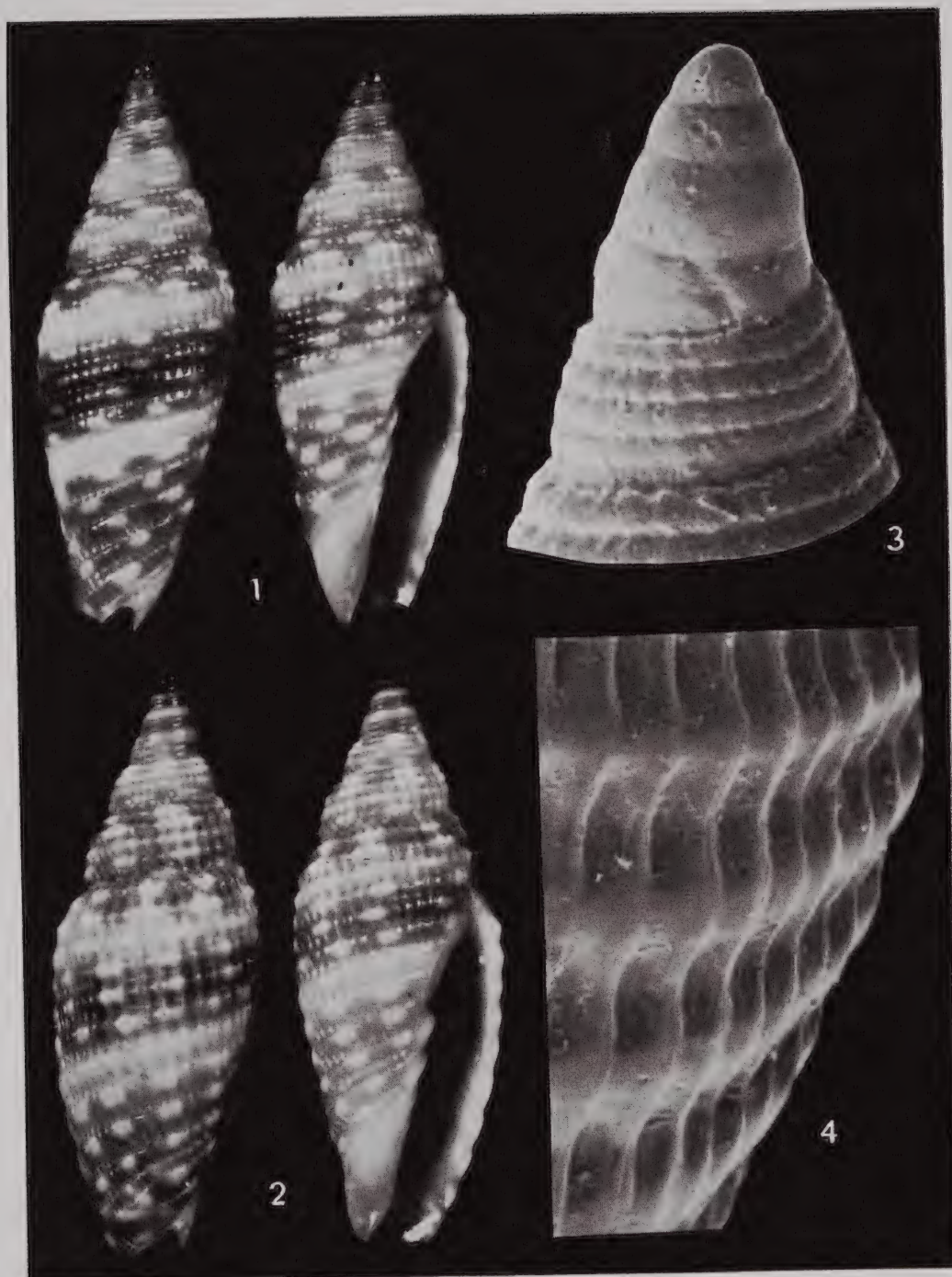
#### Subgenus *Nebularia* Swainson, 1840

#### *Mitra* (*Nebularia*) *earlei* sp. n.

(Figs. 1-5)

Shell moderately small, 11.5 - 16.0 mm in length, fusiformly-elongate, width 34%-37% of length, moderately solid, teleoconch of 5 $\frac{1}{4}$ -6 $\frac{1}{4}$  convex whorls, protoconch of 3 $\frac{1}{4}$ -3 $\frac{3}{4}$  smooth, glassy, multispiral, conical embryonic whorls; sculptured with strong, moderately elevated spiral cords which number from 4-6 (usually 5) on the penultimate and from 12-17 on the body whorl; spiral cords are bisected by moderate or strong longitudinal lirae which often produce a pitted or clathrate appearance on usually the last two whorls. Aperture slightly longer than the spire, 55%-62% of length, narrow, interior smooth, outer lip convex and foliated on the edge from the intruding spiral cords, columella with 4-5 oblique folds which decrease in size anteriorly; siphonal canal straight, siphonal notch distinct. Base colour white but with a pale lilac or rose cast in fresh specimens, protoconch brown to purple-brown, first 2-3 post-embryonic whorls frequently pale violet, body whorl with 3 orange-brown transverse bands with the narrowest band situated at the body whorl suture, and moderately large and laterally slightly elongated snow-white spots are present on the spiral cords; aperture white or pinkish-white and usually with 2 nebulous brown stains.

Radula typically mitrine, rachidian tooth rectangular and with 11 moderately



Figs. 1-4. *Mitra (Nebularia) earlei* sp. n. 1. Holotype AIM No. TM-1351; 12.8 x 4.6 mm. 2. Paratype, 13.8 x 5.0 mm. 3. Protoconch; SEM photograph, x 35. 4. Detail of sculpture; SEM photograph, x 40.

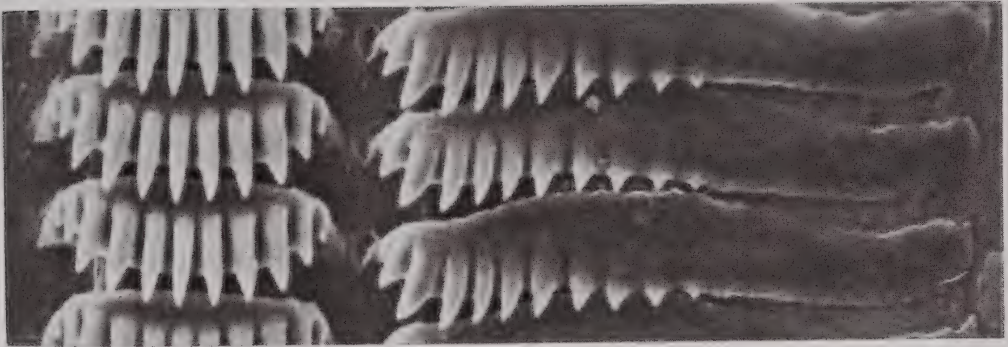


Fig. 5. *Mitra (Nebularia) earlei* sp. n. One-half of radula; SEM photograph, x 375.

long and slender denticles, laterals twice as broad as rachidians and with 12 denticles which decrease in size posteriorly, last one-third of base of lateral edentulous (Fig. 5).

TYPE LOCALITY. Pokai Bay, Oahu, Hawaiian Is. 110 - 183 m, in sand and coralline algae.

*Holotype*. Auckland Institute and Museum No. TM-1351; length 12.8 mm, width 4.6 mm, height of aperture 7.2 mm (Fig. 1).

*Paratypes*. The remaining 60 paratypes are in the National Museum of Natural History, Smithsonian Institution, Washington; the Delaware Museum of Natural History, Greenville; the Bernice P. Bishop Museum, Honolulu; the Philadelphia Academy of Natural Sciences, Philadelphia; coll. A. C. Adams; J. Earle; H. Eker; L. Hill; G. Lindner; R. Salisbury and C. Wolfe.

The sculpture of overriding longitudinal lirae (Fig. 4) is a feature usually found in the genus *Domiporta* Cernohorsky, 1970, or *Scabricola* Swainson, 1840, but the radula of *M. earlei* is typically mitrine and considerably different from the radula of either *Domiporta* or *Scabricola*. *M. (N.) earlei* is superficially similar to *M. (N.) suturata* Reeve, 1845, but this species is considerably larger, more cylindrical and constricted towards the base, the grooves between the close-set cords are pitted or axially lirate and the strong longitudinal sculpture of *M. earlei* is absent in *M. suturata*.

The species is provisionally placed in the subgenus *Nebularia* until a comparison of the radular anatomy with *Cancilla isabella* (Swainson, 1831) can be made. The species is named for Mr. J. L. Earle, Ewa Beach, Hawaii, who was instrumental in dredging specimens of the new species in 183 m at Pokai Bay.

#### Genus **Subcancilla** Olsson & Harbison, 1953

*Subcancilla* Olsson & Harbison, 1953, Acad. Nat. Sci. Philad. Mon. No. 8: 190. Type species by OD *Mitra sulcata* Swainson in Sowerby, 1825. Recent, Eastern Pacific.

***Subcancilla verrucosa foveolata*** (Dunker, 1862) (Figs. 8-10)

1862. *Mitra foveolata* Dunker, Novit. Conch. p. 46, pl. 15, figs. 5, 6, 6a.

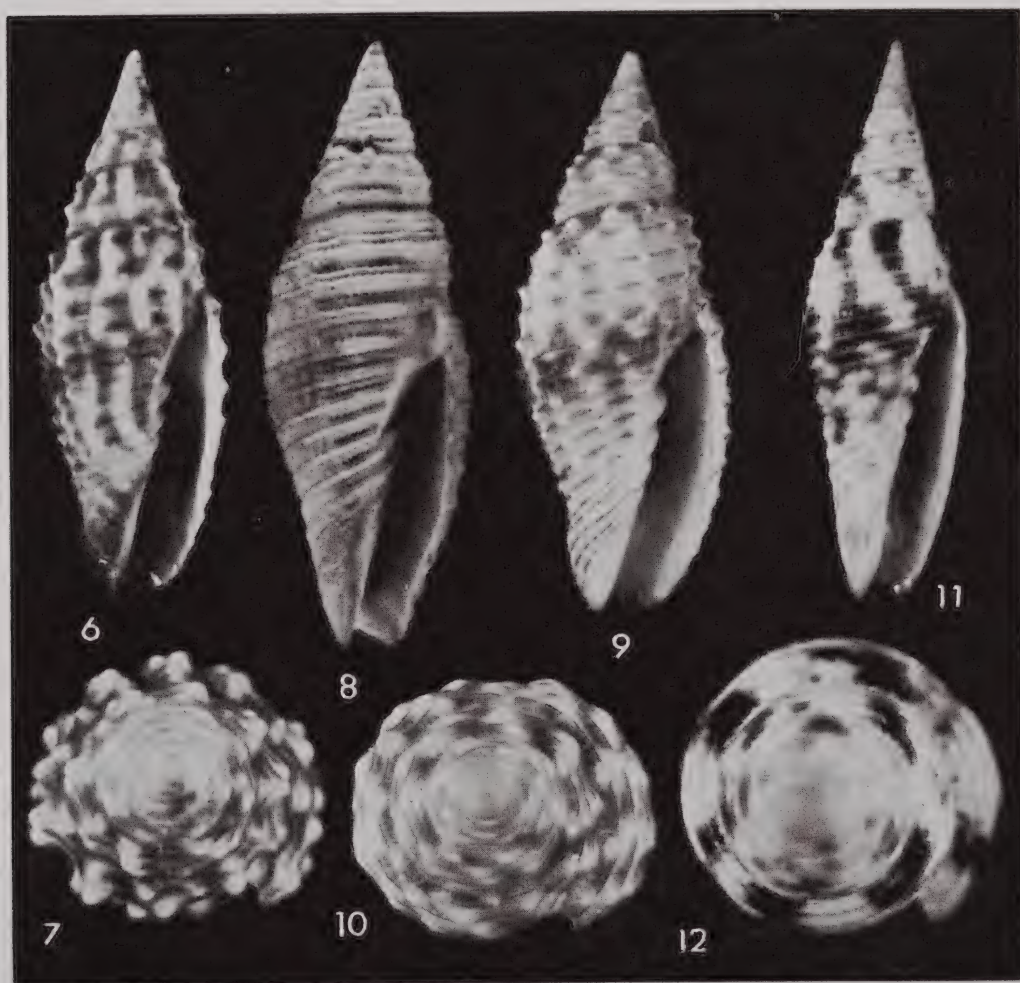
1874. *Mitra foveolata* "Hanley" (*pars*), Sowerby, Thes. Conchyl. 4: 46, pl. 359, fig. 370 only.

1952. *Mitra foveolata* Dunker, Tinker, Pacific Sea Shells, p. 56, plate facing page, figs. in bottom row.

TYPE LOCALITY. None.

Von Martens (1880) synonymized *Mitra foveolata* with *Subcancilla interlirata* (Reeve) and Tryon (1882) and von Martens (1903) placed the species in the synonymy of *Subcancilla flammea* (Quoy & Gaimard). Sowerby (1874) erroneously credited Hanley with the authorship of "*Mitra foveolata*" and illustrated 2 specimens from the "Sandwich Is" which represent two different species. The larger, 36.7 mm specimen illustrated in fig. 371 is a worn and faded *Neocancilla clathrus* (Gmelin), and the smaller, 25.1 mm long specimen depicted in fig. 370 is the Hawaiian *foveolata* Dunker.

Both *S. verrucosa* (Reeve, 1845) and *S. foveolata* have axial folds which bisect the spiral cords and produce nodes at the point of intersection. The axial folds are prominent and the nodules more echinate in *S. verrucosa*, but are more subdued and less echinate in *S. foveolata*; the degree of prominence of axial sculpture can be clearly seen when the



Figs. 6-12. Ventral and spire views. 6, 7. *Subcancilla verrucosa verrucosa* (Reeve); Rabaul, New Britain, 25.6 x 9.1 mm. 8-10. *S. verrucosa foveolata* (Dunker). 8. Holotype Zool. Mus. Berlin; 26.4 x 9.2 mm. 9, 10. Specimen from Electric Beach, Oahu, Hawaiian Is, 9 m; 22.5 x 8.7 mm. 11, 12. *S. interlirata* (Reeve); Nordup, New Britain, 30.0 x 9.0 mm.

shell is viewed from the spire (Figs. 6, 7, 9, 10). *S. interlirata* lacks the axial folds, nodules and undulate sutures (Figs. 11, 12).

According to available Museum records, *S. verrucosa verrucosa* lives in the Western Pacific area extending from the Philippines to the Marshall Is, Fiji Is, New Caledonia and back to the Philippines. *S. verrucosa foveolata* appears to be endemic to the Hawaiian Is.

### Family NASSARIIDAE

#### Genus *Nassarius* Duméril, 1806

*Nassarius* Duméril, 1806, Zool. analyt. p. 166. Type species by SM (Froriep, 1806) *Buccinum arcularia* Linnaeus, 1758. Recent, Indo-Pacific.

#### *Nassarius albus* (Say, 1826)

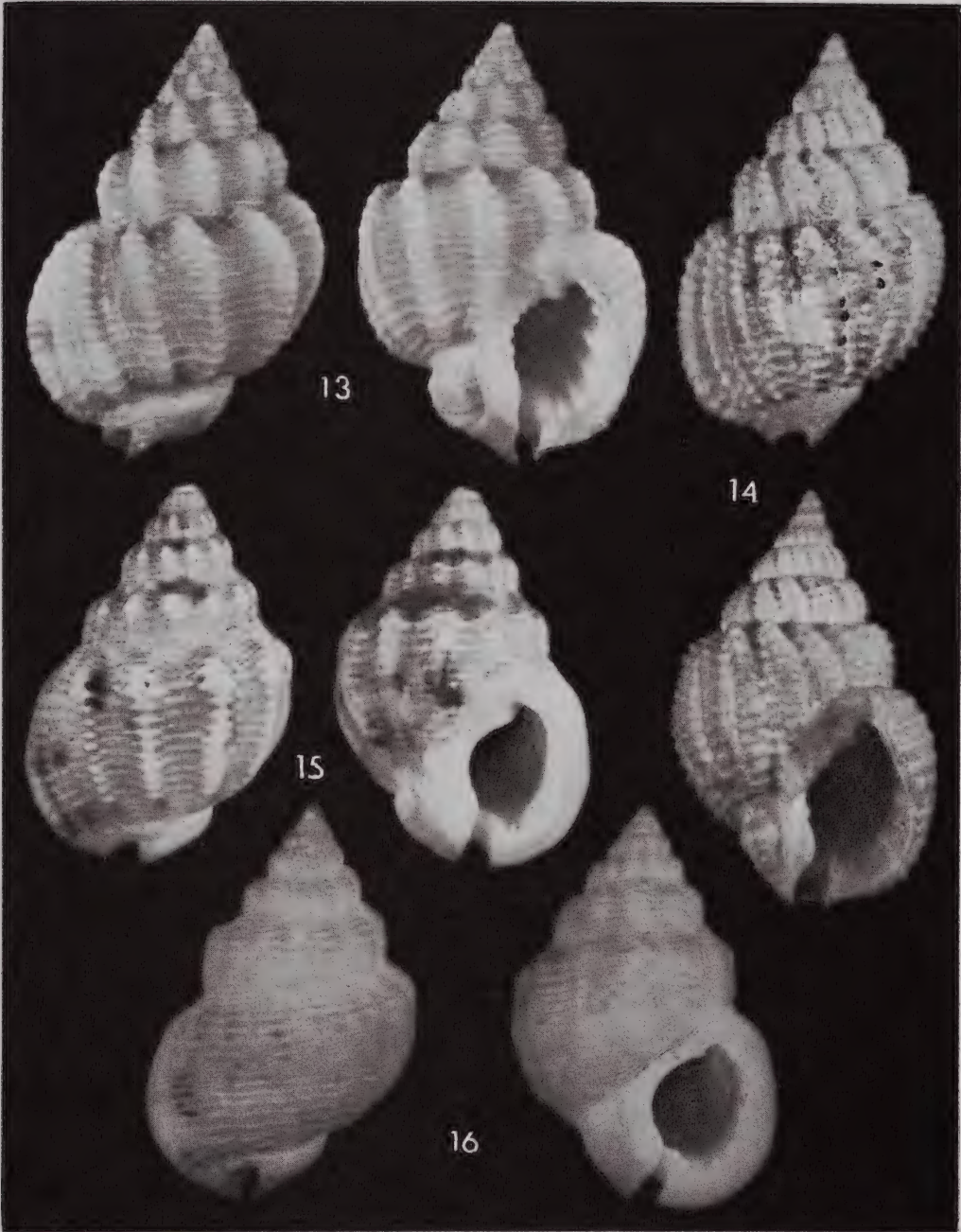
(Figs. 13-16)

1799. *Buccinum ambiguum* Pulteney, Cat. Birds Dorset, p. 42; 1803 Montague, Test. Brit. pl. 9, fig. 7 (*non* Solander 1766).
1826. *Nassa alba* Say, J. Acad. Nat. Sci. Philad. 5: 212 (Sth. coast of E. Florida and West Indies).
1843. *Nassa candei* d'Orbigny in Sagra, Hist. phys. polit. nat. l'île Cuba, 2: 142, pl. 23, figs. 4-6.
1845. *Buccinum candidissimum* C. B. Adams, Proc. Bost. Soc. Nat. Hist. 2: 2 (Jamaica).
1852. *Nassa clathratula* A. Adams, Proc. Zool. Soc. Lond. Pt. 19: 99 (Siquijor I, Philippines = error); 1853 Reeve, Conch. Icon. 8: pl. 19, figs. 125a, b.
1852. *Nassa obtusata* A. Adams, Proc. Zool. Soc. Lond. Pt. 19: 100 (Ticao I, Philippines = error); 1853 Reeve, Conch. Icon. 8: pl. 20, fig. 135.
1853. *Nassa annelifera* Reeve, Conch. Icon. 8: pl. 25, fig. 168 (Hab:?).
1877. *Nassa paucicostata* Marrat, Prop. forms gen. *Nassa*, p. 11 (Nassau); 1940 Tomlin, Proc. Malac. Soc. Lond. 24: 37.
1877. *Nassa pura* Marrat, Prop. forms gen. *Nassa*, p. 13 (West Indies); 1940 Tomlin, Proc. Malac. Soc. Lond. 24: 37.
1880. *Nassa quinquecostata* Marrat, Var. shells gen. *Nassa*, pp. 61, 82 (Hab:?) [spelled *N. quinqueplicata* on p. 89]; 1940 Tomlin, Proc. Malac. Soc. Lond. 24: 38.
1959. *Nassarius nanus* Nowell-Usticke, Check-list mar. shells St. Croix, p. 70, pl. 4, fig. 5 (St. Croix) [*non* *Nassa nana* A. Adams, 1852 = *Nassarius*].

*Nassarius albus* (Say) is an exceedingly variable species which has received 11 or more names. The following species should be added to the species synonymy.

*Nassa clathratula* A. Adams: the holotype is in the B.M.N.H. No. 197323, length 14.8 mm, width 9.5 mm; the axial ribs are slightly more slender than in typical individuals of *Nassarius albus*, and the spiral threads are crisp and override the axials. The locality indication of "Siquijor I, Philippines" is an error (Fig. 14).

*Nassa obtusata* A. Adams: three syntypes are in the B.M.N.H. No. 19713, dimensions of illustrated syntype length 12.0 mm, width 8.3 mm. The syntype is very worn and has coarse axial ribs. The locality indication of "Ticao I, Philippines" is an error (Fig. 15).



Figs. 13-16. *Nassarius albus* (Say). 13. Specimen from Grassy Key, Florida Keys, U.S.A.; 14.9 x 9.7 mm. 14. Holotype of *Nassa clathrata* A. Adams, BMNH No. 197323; 14.8 x 9.5 mm. 15. Syntype of *Nassa obtusata* A. Adams, BMNH No. 19713; 12.0 x 8.3 mm. 16. Syntype of *Nassa annelifera* Reeve, BMNH No. 19712; 13.0 x 8.1 mm.

*Nassa annelifera* Reeve: Two syntypes are in the B.M.N.H. No. 19712, dimensions of illustrated syntype length 13.0 mm, width 8.1 mm. The syntype also has coarse axial ribs which become somewhat obsolete on the dorsal side of the body whorl (Fig. 16).

Subgenus **Gussonea** Monterosato, 1912

- Gussonea* Monterosato, 1912, J. Conchyl. 59 (4): 295. Type species by M *Buccinum tinei* Maravigna, 1840. Recent, Mediterranean.
1853. *Amycla* H. & A. Adams, Gen. Rec. Moll. 1: 186. Type species by SD (Bucquoy, Dautzenberg & Dollfus, 1882) *Buccinum corniculum* Olivi, 1792. Recent, Mediterranean-West Africa (*non Amycla* Rafinesque, 1815; *nec* Doubleday, 1849).
1918. *Amyclina* Iredale, Proc. Malac. Soc. Lond. 13: 28, 31. Type species (Art. 67 (i) of ICZN) *Buccinum corniculum* Olivi, 1792 (*nom. subst. pro Amycla* H. & A. Adams, 1853).
1972. *Fackia* Nordsieck, Mioz. Moll. Miste-Winterswijk, p. 78. Type species by OD *Nassa facki* Koenen, 1872. Miocene of Europe.

When Iredale (1918) proposed *Amyclina* for the homonymous *Amycla* H. & A. Adams, 1853, he overlooked the prior generic group *Gussonea* which Monterosato (1912) proposed for *Buccinum tinei* Maravigna, from the Mediterranean. Nordsieck (1968) and Parenzan (1970) place *B. tinei* in *Amyclina*, a genus-group which has been either treated as a full genus or a subgenus of either *Nassarius* or *Hinia*. *Buccinum tinei* is indeed consubgeneric with *Nassarius corniculum* (Olivi), and *Amyclina* Iredale, 1918, will have to be replaced by *Gussonea* Monterosato, 1912. It should be pointed out, however, that species of *Gussonea* are conchologically similar to species of *Telasco* H. & A. Adams, 1853 (type-species *Buccinum cuvierii* Payraudeau, 1826).

Family BUCCINIDAE

Genus **Phos** Montfort, 1810

*Phos* Montfort, 1810, Conchyl. Syst. 2: 495. Type species by OD *Murex senticosus* Linnaeus, 1758. Recent, Indo-Pacific.

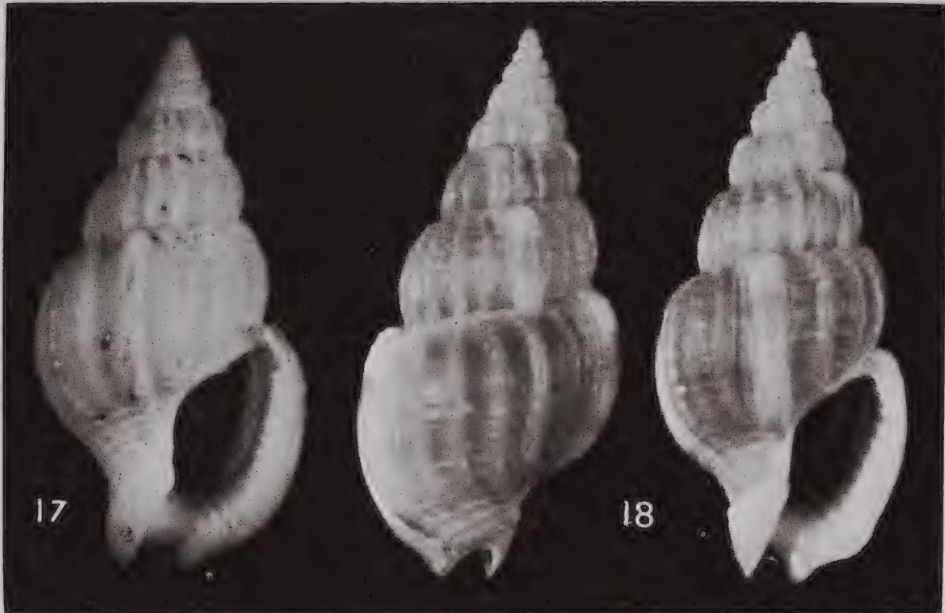
**Phos naucratoros** Watson, 1882 (Figs. 17, 18)

1882. *Phos naucratoros* Watson, J. Linn. Soc. Lond. 16: 360.

1886. *Phos naucratoris* (*sic*), Watson, Rept. Sci. Res. Voy. H.M.S. Challenger, 15: 218, pl. 13, figs. 11a-c.

TYPE LOCALITY. Admiralty Is, Papua New Guinea, 150 fathoms (275 m).

The species is creamy-white in colour, occasionally with faint reddish-brown bands. It is variable in shape, some specimens being broader than others, some of the axial ribs are thickened into varices and spiral sculpture consists of primary spiral cords and fine intermediate spiral striae. Numerous specimens of this species have been recently dredged off Cape Moreton, Queensland, Australia, in 110-137 m.



Figs. 17, 18. *Phos naucratoros* Watson. 17. Holotype BMNH No. 1887. 2. 9. 749.; 24.2 x 12.3 mm. 18. Specimen from Cape Moreton, Qld., Australia, 119 m; 24.8 x 12.0 mm.

Family HARPIDAE

Genus *Austroharpa* Finlay, 1931

*Austroharpa* Finlay, 1931, Trans. Proc. N.Z. Inst. 62: 13. Type species by OD *Harpa pulligera* Tate, 1889. Miocene of Victoria, Australia.

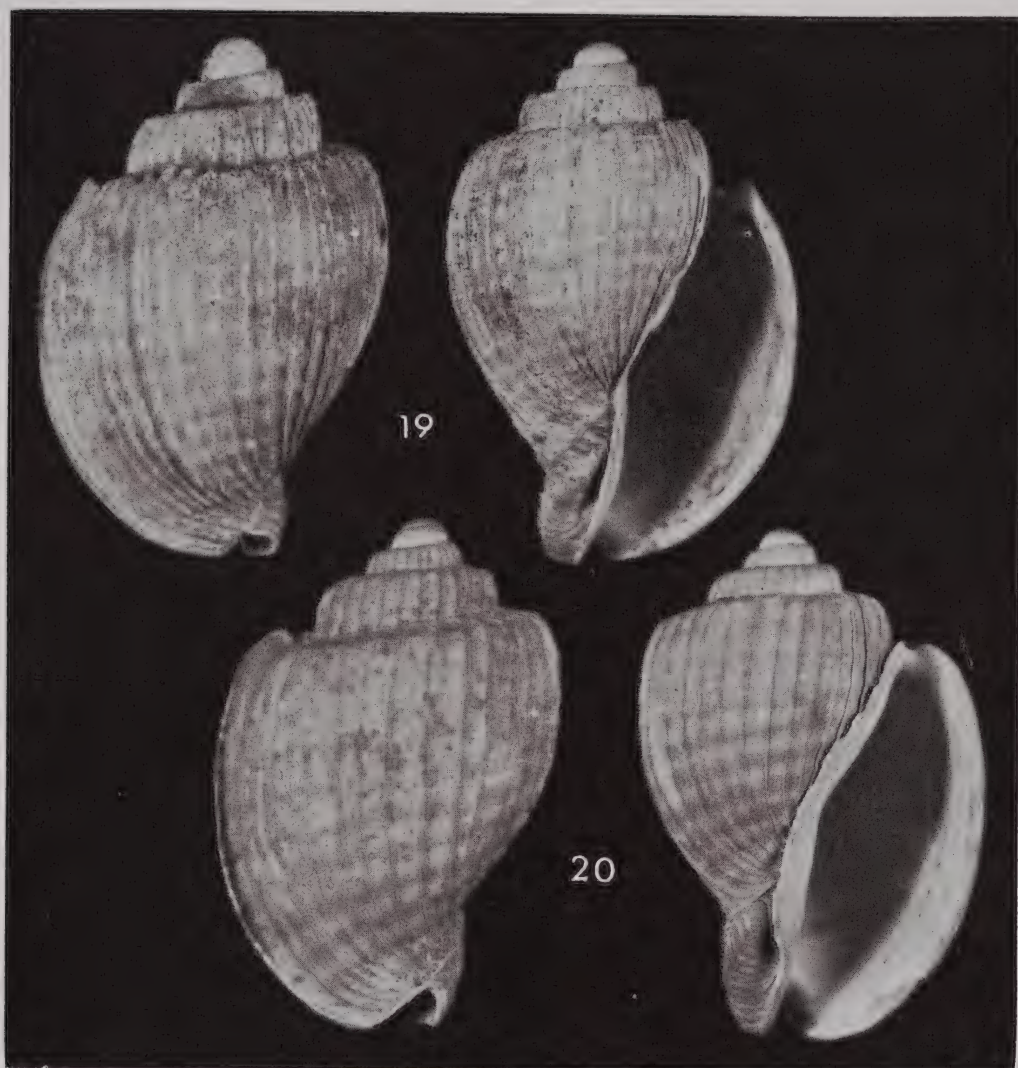
*Austroharpa tatei* Finlay, 1931 (Fig. 20)

- 1931. *Austroharpa tatei* Finlay, Trans. Proc. N.Z. Inst. 62: 14.
- 1941. *Austroharpa sulcosa* Tate, Ludbrook, Trans. R. Soc. Sth. Aust. 65 (1): 100.
- 1958. *Harpa (Austroharpa) tatei* (Finlay), Ludbrook, Trans. R. Soc. Sth. Aust. 81: 73, pl. 4, fig 5 (figd. holotype — figure does not agree with actual type).
- 1973. *Austroharpa (Palamharpa) tatei* Finlay, Rehder, Indo-Pacific. Moll. 3 (16): 269, pl. 240 (copy of Ludbrook's drawing).

TYPE LOCALITY. Abbatoirs Bore, 400-500 feet (122-152 m), Adelaide, Pliocene of Sth. Australia.

Finlay (1931) described *A. tatei* as a new species despite his own remarks that the new species is "extremely close to *sulcosa* Tate". Ludbrook (1941) considered the Adelaidean Pliocene harpid from Abbatoirs Bore to be the species *A. sulcosa* (Tate), but Ludbrook (1958) identified the Pliocene species as *A. tatei* Finlay; the drawing of the holotype of *A. tatei* as given by Ludbrook (1958, pl. 4, fig. 5) shows a slender





Figs. 19, 20. 19. *Austroharpa sulcosa* (Tate). Muddy Creek, Mid-Miocene of Victoria, Australia; 30.7 x 21.0 mm. 20. *A. tatei* Finlay. Holotype, Abbatoirs Bore, Adelaide, Pliocene of Sth. Australia; AIM No. TM-67, 25.8 x 17.3 mm.

harpid with a sloping shoulder, and is quite different in appearance from the actual holotype (Fig. 20). This erroneous drawing of *A. tatei* undoubtedly prompted Rehder (1973) to consider *A. tatei* to be a separate species from the Mid-Miocene *A. sulcosa* Tate.

The holotype of *Austroharpa tatei* Finlay, is in the Auckland Institute and Museum No. TM-67, length 25.8 mm, width 17.3 mm; the type is as angulate on the presutural ramp as *A. sulcosa* and the spiral sculpture is also equally as feeble, and under magnification, remains of some worn-down spines are visible on the axial ribs at the shoulder. The difference in the number of axial ribs between the two "species"

(*A. sulcosa* = 38 and *A. tatei* = 33) cannot be considered of specific importance since specimens of the Recent *Harpa costata* (Linnaeus) have 30-45 plus ribs on the body whorl. The Mid-Miocene specimen of *A. sulcosa* here illustrated (Fig. 19) has actually 47 axial ribs, which is quite in excess of the 38 ribs as usually cited for this species. Numerous gastropod species have a continuous range from the Mid-Miocene to the Pliocene of Southern Australia, and in my opinion *A. tatei* is only the Pliocene form of *A. sulcosa*. The holotype of *A. tatei* also bears a resemblance to the holotype of the Recent species *A. exquisita* (Iredale, 1931), suggesting an evolution from the Mid-Miocene *sulcosa* via the Pliocene *tatei* to the Recent *exquisita*.

### Family TRIPHORIDAE

#### Genus *Viriola* Jousseume, 1884

*Viriola* Jousseume, Bull. Soc. malac. France 1: 234, 238. Type species by OD *V. bayani* Jousseume, 1884. Recent, Indo-Pacific.

1915. *Sinistroseilla* Oliver, Trans. Proc. N.Z. Inst. 47: 523. Type species by OD *Triphoris incisa* Pease, 1861. Recent, Indo-Pacific.

#### *Viriola samoana* sp. n.

(Figs. 21-26)

Shell very small, 6.0 mm in length, spindle-shaped, broad at the base becoming slender-acuminate towards the spire, mature whorls 15 plus a dome-shaped and somewhat pustulose protoconch of  $1\frac{1}{2}$  embryonic whorls; first to third post-embryonic whorls sculptured with slender and strong axial ribs but no spiral keels, fourth whorl becoming bi-angulate through the appearance of 2 spiral keels, fifth to eleventh whorls with 2 prominently elevated spiral keels which are rendered weakly nodulose by intruding axial ribs, axial sculpture becoming obsolete on the eleventh whorl. An intermediate third central spiral cord appears on the twelfth whorl and becomes progressively larger towards the body whorl but is never as strong as the two flanking main cords; sculpture between spiral cords consists of 9-12 fine, granulose and scabrous spiral threads, peripheral cord on body whorl broader and axially plicate. Aperture almost circular, edge fluted, posterior canal appearing as a moderately deep and open sinus on the posterior edge of the outer lip, anterior canal short, broad, grooved and recurved. Protoconch and 3 post-embryonic whorls brown, following 5 whorls white and remaining 6-7 whorls very pale lilac, ornamented with brown bands between sutures.

TYPE LOCALITY. Apolima Strait, West of Upolu I, Western Samoa, dredged subtidally.

*Holotype*. Auckland Institute and Museum No. TM-1353; length 5.9 mm, width 1.8 mm (Figs. 21, 22).

*V. samoana* resembles *V. cancellata* (Hinds) and *V. intercalaris* (Gould), but differs in shape and sculpture, the latter two species having close-set spiral cords and a distinctly nodulose central cord. *V. incisa* (Pease) is also similar, but in this species the spiral cords are close-set, thick and rope-like.

The placement of *samoana* in the genus *Viriola* is only tentative. Although the sculpture and siphonal canal are the same as in species of *Viriola*, the shape of the shell is more like *Mastonia* Hinds. Both *Viriola* and *Mastonia* species have an acuminate,



Figs. 21-26. *Viriola samoana* sp. n. 21, 22. Holotype AIM No. TM-1353; 5.9 x 1.8mm. 23. Aperture enlarged; SEM photograph, x 30. 24. Spire whorls enlarged; SEM photograph, x 45. 25. Protoconch; SEM photograph, x 125. 26. Detail of sculpture on the penultimate whorl; SEM photograph, x 135.

multispiral protoconch, whereas *samoana* has a blunt, dome-shaped, paucispiral protoconch which resembles the monotypic genus *Sychar* Hinds, 1843.

*Acknowledgements.* I am grateful to Dr J. Taylor and Ms K. Way, British Museum (Nat. Hist.), London, for facilitating access to the type-collections. I would like to thank Dr R. Kiliyas, Zoological Museum, Humboldt University, Berlin, for a photograph of the type of *Mitra foveolata* Dunker, and Mr R. Willan, Zoology Department, Auckland University, for Scanning Electron Microscope photographs appearing in this paper.

## REFERENCES

FINLAY, H. J.

- 1931 On *Austrosassia*, *Austroharpa* and *Austrolithes*, new genera; with some remarks on the gasteropod protoconch. *Trans. Proc. N.Z. Inst.* 62: 7-19.

IREDALE, T.

- 1918 Molluscan nomenclatural problems and solutions. — No. 1. *Proc. Malac. Soc. London* 13: 28-40.

LUDBROOK, N. H.

- 1941 Gastropoda from the Abbatoirs Bore, Adelaide, South Australia together with a list of some miscellaneous fossils from the bore. *Trans. R. Soc. Sth. Australia* 65 (1): 79-102, pl. 4-5.
- 1958 The molluscan fauna of the Pliocene strata underlying the Adelaide plains, Part V — Gastropoda (Eratoidae to Scaphandridae). *Trans. R. Soc. Sth. Australia* 81: 43-111, pl. 1-6.

MARTENS, E. VON

- 1880 *Beitraege zur Meeresfauna der Insel Mauritius und der Seychellen. Mollusken.* Berlin, pp. 181-336, pl. 19-22.
- 1903 *Wissenschaftliche Ergebnisse der deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898-1899. Die beschalteten Gastropoden.* G. Fischer, Jena, 7: 1-174, pl. 1-9.

MONTEROSATO, T. DI

- 1912 Historique du *Nassa tinei*. *J. Conchyl.* 59 (4): 294-296.

NORDSIECK, F.

- 1968 *Die europaeischen Meeres-Gehaeuseschnecken (Prosobranchia) vom Eismeer bis Kapverden und Mittelmeer.* G. Fischer, Stuttgart, pp. 1-273, pl. 1-31.

PARENZAN, P.

- 1970 *Carta d'identita delle conchiglie del Mediterraneo. Vol. 1. Gasteropodi.* Bios Taras, Taranto, pp. 1-283, pl. 1-53, textfigs.

REHDER, H. A.

- 1973 The family Harpidae of the world. *Indo-Pacific Mollusca* 3 (16): 207-274, pl. 183-247.

SOWERBY, G. B.

- 1874 *Thesaurus Conchyliorum. A monograph of the genus Mitra.* G. B. Sowerby, London, 4: 1-46, pl. 352-379 (1-28).

TRYON, G. W.

- 1882 *Manual of Conchology.* G. W. Tryon, Philadelphia 4: 1-276, pl. 1-58.